

A New Kind of War: Are We Prepared for Agroterrorism?

**A Monograph
by
MAJ Grant L. Morris
U.S. Army**



**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

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MAJ GRANT L. MORRIS

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Approved by:

Timothy Challans, Ph.D.

Monograph Director

Kevin C.M. Benson, COL, AR

Director,
School of Advanced
Military Studies

Robert F. Baumann, Ph.D.

Director,
Graduate Degree
Programs

Abstract

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In the post 9/11 world, the U.S. must focus its security efforts on everything from airports to al-Qaeda. With resources stretched thin and priorities focused on prosecuting the Global War on Terror (GWOT), our current government structures and capabilities are not suited to manage an attack using biological warfare (BW) on humans or agriculture. The fact that the U.S. has made no arrests in connection with the September 18, 2001 anthrax attacks in Florida, New York and Washington are a stark reminder of how ill-prepared our local, state and federal agencies are in defending against BW attacks. Of the potential BW targets in the U.S. the least protected are the agricultural industry's animals. According to the Federal Bureau of Investigation, the agricultural industry is the most likely target of a BW attack, and the pathogen which produces foot-and-mouth disease (FMD) is the most likely pathogen to create significant economic and social devastation in the U.S.

The American agricultural industry produces the world's safest and cheapest food, but those systems which make the industry so reliable also make it vulnerable. Individuals who desire to disrupt the U.S. economy could introduce a small quantity of plant or animal pathogens into the many unprotected nodes of the agricultural system creating the most devastating attack the U.S. has ever seen. Providing 13% of the U.S. Gross Domestic Product (GDP), employing 15% of the U.S. population and producing more than \$50 billion yearly in exports, agriculture is one of the primary industries in the U.S. and one of the few industries with a positive trade balance. Although a single attack on the agricultural industry may not result in its destruction, an attack would result in the interruption of food supplies, disruption of interstate travel and trade embargos placed on the U.S. The psychological impacts of a major agroterrorist attack would be similar to the impact 9/11 had on the airline industry.

In the event of a major attack on our agriculture—known as agroterrorism—over 30 local, state and federal agencies including the Department of Defense (DoD) will be called upon to respond to the incident. Over the last six years several bioterror and agroterror exercises have shown significant gaps in U.S. capabilities to prevent, prepare, respond and recover from domestic biological and agricultural acts of terrorism. A common theme in the after action reports of these exercises is America's unpreparedness for the significant psychological, moral and ethical challenges posed by a major attack on our agricultural industry. The U.S. would suffer a breakdown in essential institutions and our civilian biodefense experts and scientists would be overwhelmed—possibly to the point of failure. This monograph presents recommendations to enhance the security of the homeland from the consequences of agricultural terrorism.

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Chapter 1: Introduction

The Agroterrorism Threat in America

"For the life of me, I cannot understand why the terrorists have not attacked our food supply because it is so easy to do."

**Former Secretary of the U.S. Department of Health and Human Services, Tommy Thompson
7 December 2004**

In recent years, the world has seen a surge in highly toxic, animal-borne zoonotic and non-zoonotic diseases. Zoonotic diseases are those that can be passed from animals to humans either through direct or indirect contact, such as highly pathogenic avian influenza (HPAI) and severe acute respiratory syndrome (SARS); while non-zoonotic diseases are those diseases which will not pass between animals and humans such as foot-and-mouth disease (FMD) or smallpox, but may pass between different species of animals. Since these highly toxic diseases have become more common and accessible, they are increasingly seen as potential weapons which will be used against the U.S. by terror organizations. One of these highly contagious non-zoonotic diseases, foot-and-mouth disease, is considered by many terror experts, the most likely and most dangerous weapon a terror organization might use against us. With the proliferation of these diseases, terror organizations now have the ability to infect U.S. agriculture with pathogens that can cause severe economic devastation and lose of faith in the government to provide safe, plentiful, and relatively cheap food supply. Despite the severity of the threat of agroterrorism, *the U.S. government (local, state and federal) has failed to provide adequate capabilities suited to prevent or mitigate the consequences of a major agricultural attack in the U.S.*

What is Bioterrorism?

Although there is no one accepted definition of bioterrorism, for the purpose of this study bioterrorism is defined as the intentional use of disease-producing microorganisms, biologically derived toxins or other agents of biological origin as weapons to kill or impair humans, animals, plants, or to damage equipment. The Defense Intelligence Agency uses the term bioterrorism

when referring to a terrorist's intent (fear, attention to a cause, disruption, economic impact or social and political pressures to change our will and society), while they use the term biological warfare (BW) when referring to States using weaponized biological agents in the conduct of combat.¹ Although intent separates an act of terrorism from an act of war, for the purpose of this study, the terms bioterrorism and biological warfare (BW) are used interchangeably.

Although pathogens are somewhat harder to weaponize than conventional explosives, and their effects are usually not immediately known, many features of BW make it an attractive weapon for terrorists. The most significant factor for using BW is the potential scale of the attack. Depending on the type of pathogen used, the agent can be aerosolized or delivered in infected clothes or meat. If done correctly, a terrorist can potentially expose thousands of animals or humans to an agent without warning. An exposure on this scale might eventually lead to hundreds of fatalities and would create tremendous social disruption and public fear—effects which are highly desirable in a terrorist's mind. Despite these potential threats, the U.S. lacks a concerted national program to prevent and control illnesses caused by these pathogens.

What is Agroterrorism?

A subset of bioterrorism, agroterrorism is the use, or threatened use, of biological (to include toxins), chemical, or radiological agents against some component of agriculture in such a way as to adversely impact the agriculture industry or any component thereof, the economy, or the consuming public.² Agroterrorism is also addressed in USC, Section 43 of Title 18 (Animal Enterprise Terrorism) as terrorism that, “intentionally damages or causes the loss of any property

¹ *Agricultural Threats – Livestock and Crops*. U.S. Federal Bureau of Investigation. International Symposium on Agroterrorism. Available online, <<http://www.fbi-isa.org/presenters.html>>, May 3, 2005. Slide 7, accessed 25 September 2006.

² There is not a universally accepted definition used for agroterrorism. The definition used in this study was presented by the Armed Forces Medical Intelligence Center, Defense Intelligence Agency to the International Symposium on Agroterrorism, 3 May 2005, slide 6. According to a March 2005 GAO report on Homeland Security agroterrorism is defined as, “refers to the deliberate introduction of animal and plant diseases at the farm level, prior to further processing or production.”

(including animals or records) used by the animal enterprise.”³ Agroterrorism is further defined in the Agroterrorism Prevention Act of 2001, adding plants to list of items it is illegal to intentionally damage.⁴

Exercises in Bioterrorism (Exercise Dark Winter)

In Oklahoma City, on December 9, 2002, one confirmed case and up to 20 other cases of smallpox were reported to the Centers for Disease Control (CDC). In the days following the initial confirmed case, first responders and medical personnel in Oklahoma City failed to show up at work, the Governor of Oklahoma requested the President declare a state of emergency and invocation of the Stafford Act.⁵ In the week after the outbreak, new cases were observed in Georgia and Pennsylvania, and over 300 people had already died from the disease. Within 14 days the epidemic spread to 25 states, killed several million people and completely destroyed U.S. economic viability.⁶

This horrific but imaginary scenario was part of the exercise Dark Winter conducted at Andrews Air Force Base in June 2001. As a result of the exercise, senior leaders realized significant gaps in U.S. capabilities to prevent, detect, respond and recover from domestic biological weapons (BW) attacks. Some of the key learning points from the exercise are:⁷

1) A biological weapons attack on the U.S. could cause massive civilian casualties, breakdown in essential institutions, violation of democratic processes, civil disorder [i.e. National

³ *Animal Enterprise Terrorism, Title 18, Part 1, Chapter 3, Section 43*. Available online, <<http://www.law.cornell.edu/uscode>>, accessed 20 September 2006.

⁴ *Agroterrorism Prevention Act of 2001*. U.S. Congress, House of Representatives. Washington D.C., June 5, 2001.

⁵ The Robert T. Stafford Disaster Relief and Emergency Assistance Act authorizes the President to issue a major disaster declaration to speed a wide range of federal aid to states determined to be overwhelmed by hurricanes or other catastrophes.

⁶ *DARK WINTER*. Johns Hopkins Center for Civilian Biodefense Center for Strategic and International and Memorial Institute for the Prevention of Terrorism Studies. Bioterrorism Exercise. Available online: <<http://www.mipt.org/darkwinter06222001.asp>>, June 22-23, 2001, accessed 9 October 2006.

⁷ *Dark Winter Teaches Bioterror Lessons*. <<http://www.usmedicine.com/article.cfm?articleID=322&issueID=33>>, December 2001, accessed 9 October 2006.

Guardsmen firing shots at panicked civilians], loss of confidence in government and reduced strategic ability abroad.

2) Current government structures and capabilities are not suited to manage a biological weapons attack. In fact, major cavernous gaps exist between federal, state and local governments and the private sector.

3) U.S. health care infrastructure, including the pharmaceutical and vaccine industries, lack a surge capacity and would be overwhelmed and even made inoperable by a widespread epidemic.

4) Managing the media and providing citizens with effective information would be a major, immediate challenge for all levels of government.

5) Americans are presently unprepared for the significant ethical, political, cultural, operational and legal challenges posed by a biological weapons attack.

According to Jerome M. Hauer, the former Director of the Mayor's Office of Emergency Management in New York City and a bioterrorism consultant, "Dark Winter showed just how unprepared we are to deal with bioterrorism...It pointed out that there were significant challenges to all levels of government."⁸

Changes after 9/11

Just three months after the exercise, terrorists hijacked four airplanes on 9/11 ushering in a new age of "terror-aware" America and testing the five lessons learned from the Dark Winter exercise. In the aftermath of September 11, 2001, the United States government passed new legislation such as the Patriot Act and elevated the Office of Homeland Security to a cabinet level department in order to better coordinate the efforts of some 40 federal agencies while implementing new policies to prevent another terror attack on American soil. One of the most

⁸ U.S. *Government Moves to Step Up Bioterrorism Preparedness*. Center for Defense Information. Terrorism Project. Available Online <<http://www.cdi.org/terrorism/bioterror-pr.cfm>>, 18 October 2001, 15 August 2006.

notable changes in U.S. security efforts was the establishment of the Transportation Security Administration, which was tasked to increase security at some 361 sea ports⁹ and nearly 15,000 airports.¹⁰ In order to support this security requirement, in 2006, the Transportation Security Administration received a budget of \$5.56 billion.¹¹ While Americans may have a safer transportation network, forgotten in this improved security environment is the September 18, 2001 anthrax attacks in Florida, New York and Washington. In contrast to the dramatically increased funding for air and sea ports, the Department of Agriculture received only \$298 million for all six major agricultural inspection and defense programs¹² for the same year, with only \$29 million dedicated to research, testing, development and evaluation (RTD&E) programs.¹³

In October 2001, Secretary of Health and Human Services, Tommy Thompson argued that, "bioterrorism has not been a high fiscal priority in the past, and we need to move aggressively." Highlighting his remarks on October 17, 2001, Secretary Thompson requested \$1.5 billion in new funding to fight BW and bioterrorism.¹⁴ The importance of protecting our crop and animal food supply should not be underestimated, even though there are less than 2 million farmers and ranchers in America, the U.S. provides almost 15% of the world's agriculture including corn, beef, pork, poultry and cotton. Agricultural production provides 22 million jobs in the U.S. and contributes over \$1 trillion annually to the U.S. economy. In economic terms, the

⁹ *Targets for Terrorism: Ports*. Council on Foreign Relations. Available online, <http://www.cfr.org/publications/10215/targets_for_terrorism.html>, January 2006, accessed 15 November 2006.

¹⁰ *World Fact Book*. U.S. Central Intelligence Agency. Available online: <<https://www.cia.gov/cia/publications/factbook/geos/us.html>>, accessed 22 August 2006.

¹¹ *Budget in Brief, Fiscal Year 2006*, U.S. Department of Homeland Security. Available online: <http://www.dhs.gov/interweb/assetlibrary/Budget_BIBFY06_2-7-05.pdf>, FY 2006. Washington, D.C., 2005. Page 37, accessed 22 August 2006.

¹² *2006 Discretionary Budget Authority*, U.S. Department of Agriculture. Available online: <<http://www.whitehouse.gov/omb/budget/fy2006/agriculture.html>>, FY 2006. Washington, D.C., 2005, accessed 30 August 2006.

¹³ *Federal Funding for Biological Weapons Prevention and Defense, Fiscal Years 2001 to 2007*. Center for Arms Control and Non-Proliferation. Biological and Chemical Weapons Control Program. Washington, D.C., 2006. Page. 3, accessed 1 September 2006.

¹⁴ *U.S. Government Moves to Step Up Bioterrorism Preparedness*. Center for Defense Information. Terrorism Project. Available Online <<http://www.cdi.org/terrorism/bioterror-pr.cfm>>, 18 October 2001, accessed 18 August 2006.

agriculture industry provides 15% of the U.S. Gross Domestic Product, and in 2005, food and agriculture exports reached approximately \$59 billion making 2005 the third highest export sales year in U.S. history.¹⁵

Recommended Changes

While some of the post 9/11 changes with regard to transportation security have had a positive affect on our ability to respond to BW; more can be done to ensure our safety not only from BW attacks on American citizens, but from BW attack on our agriculture. Four major changes that would increase our ability to prevent, prepare, respond and recover from domestic BW attack are:

1. Change and/or ensure compliance with current legislation and capabilities within federal departments:
 - a. Add attacks on plants and animals to definition of weapons of mass destruction (WMD).
 - b. Enforce legislation of Homeland Security Presidential Directive 9 (HSPD 9) reducing the vulnerability of agribusiness as well as streamlining departmental response.
2. Consolidate and expand the Department of Health and Human Services (HHS) and the Department of Agriculture (USDA) to include:
 - a. Combine or link systems of the Departments of Agriculture (USDA) and Health and Human Services (HHS) to ensure consistency of information without duplicity of efforts.
 - b. Change USDA accreditation rules to ensure veterinarians receive specialized training in Foreign Animal Diseases (FAD).
 - c. Reform in hiring practices for animal and plant scientists
 - d. Consolidation in detection and analysis resources

¹⁵ *Agro-Terrorism*, A statement made before the Committee on Armed Services Emerging Threats and Capabilities. Senate. Washington, U.S. Government Printing Office, 1999.

- e. Increasing stockage levels of ready-to-use vaccines which cover a broad range of potential pathogens.

- 3. Redefine the role of the National Guard, focusing more effort toward a civil defense force capable of disaster recovery and prevention. While maintaining limited capabilities to fulfill the Guard's federal mission, restructure capabilities away from non-fungible skills to skills proven vital during disaster situations such as truck drivers, engineers, medics, police and helicopter pilots.

- 4. Increase local, state and federal interaction.

- a. Enhance communications interoperability between local, state and federal responders.

- b. Continue to conduct state and local antiterrorism mitigation and response planning and training exercises.

Chapter 2: The Threat of Terrorism

"You don't have to be a genius or well trained to [introduce] something like foot-and-mouth disease, and do it in five or six areas of the country and basically wipe out most of the live-stock industry in the United States."

Senator Pat Roberts
Chairman, Senate Select Committee on Intelligence
15 February 2004

The History of Agroterrorism

Bioterrorism is not a new phenomenon; throughout history armies used BW in the form of poisoning their enemy's water supplies. In 1346 bioterrorism changed when Mongol invaders hurled plague infested bodies over the walls of the city of Kaffa in the Crimea. As a result of this attack, in 1347 the besieged Genoese left for Europe carrying with them the bubonic plague beginning the era of the "black death" killing over 25 million people in under five years. Similarly, in 1763 and 1767, British soldiers gave smallpox laden blankets and handkerchiefs to Indians loyal to the French. This tactic decimated Indian tribes and may have led to the British victory over the Indians at Ft. Carillon.

In 1952 a new form of BW began – agroterrorism. A Kenyan insurgent organization known as the Mau Mau killed 33 head of cattle using a local plant toxin known as African milk bush during elections to ensure the separation of Kenya from British Colonial power. In 1984, in order to influence local elections by keeping voters away from the poles, the Rajneeshee cult spread salmonella in salad bars at Oregon restaurants, on Election Day, resulting in 721 cases of salmonella poisoning.¹⁶

Although experts disagree on the nature and extent of the bioterrorist threats to U.S. agriculture, many analysts urge development of prudent response capabilities. Since 9/11 the Department of Homeland Security has established the National Biodefense Analysis and Countermeasures Center (NBACC) and the Department of Agriculture has established the

¹⁶ Bruce K. Hope, *Using Fault Tree Analysis to Assess Bioterrorist Risks to the U.S. Food Supply*. Human and Ecological Risk Assessment. Boca Raton: Apr 2004. Vol.10, Iss. 2; pg. 327, Page 392.

National Plant Diagnostic Network (NPDN). However, in a 2002 USDA-sponsored simulation exercise, terrorists intentionally introduced foot-and-mouth disease (FMD) in five locations in the United States and according to Senator Pat Roberts, “the disease was not detected for six days, all meat exports stopped and panic broke out in U.S. cities because of concerns about the safety of the food supply.”¹⁷

Employing Biological Agents

Although there are no documented terror attack using plant or animal pathogens against the U.S. agriculture systems, many reasons exist to believe that rogue governments or non-state actors might use BW against the U.S. economy (agricultural industry) rather than a radioactive “dirty bomb” against the U.S. population. Factors supporting this argument include: (1) development and deployment of BW require less sophisticated methods than obtaining and transporting radioactive waste; (2) biological agents can be procured and reproduced in small, undetectable quantities reducing the risk of apprehension prior to carrying out the attack and (3) crops and animals are soft targets because of the difficulty associated with protecting them.¹⁸

In order to understand what type of agroterrorist attack the U.S. might sustain, it is important to understand the motivations of an attacker. Three scenarios for a likely attacker’s goals are considered:

(1) By directly exposing humans through contact, inhalation, or ingestion, the agent causes adverse health outcomes or death to humans.¹⁹ An example of this type of attack is the 2001 anthrax attacks in Florida, Washington D.C. and New York, killing 5 and hospitalizing 17

¹⁷ *Senate Panel Pushes Officials On Agro-Terrorism Readiness*. CongressDaily. National Journal Group, Inc., July 7, 2005.

¹⁸ *Agro-Terrorism*, A statement before the Committee on Armed Services Emerging Threats and Capabilities. Senate. Washington, U.S. Government Printing Office, 1999.

¹⁹ Bruce K. Hope, *Using Fault Tree Analysis to Assess Bioterrorist Risks to the U.S. Food Supply*. Human and Ecological Risk Assessment. Boca Raton: Apr 2004. Vol.10, Iss. 2; 327 Pages.

others²⁰. Another similar attack, this time using a chemical agent instead of a biological agent, was the 1995 attack in a Japanese subway station where Methyl Cyanide was used to kill 5 and hospitalize 565.²¹ These types of attacks, although deadly to those directly exposed, are probably the least likely and least destructive type of attack the U.S. will face from current terror organizations such as al-Qaeda or other associated global terror networks.²²

(2) To indirectly cause adverse outcomes in humans by introduction of biological agents to the bottom of the food supply chain (plant germplasm)²³, reducing the availability of long-term food supply sustainability in a region.²⁴ In order to reduce the long-term food supply a terrorist would have to destroy crops at the germplasm level. In the U.S., the National Small Grains Collection at Aberdeen, Idaho stores over 118,000 accessions of wheat, barley, oat, rice, rye, and triticale germplasm and related wild species.²⁵ The introduction of biological agents at this facility could destroy entire generations of germplasm.

(3) Mass disruption of food supply in order to not only limit availability, but destroy a particular region's long term financial markets. In this type of attack, adverse health effects or death to humans is not the intended end-state, this is especially true when such crimes are committed by domestic based, ecoterrorist²⁶ groups like the Animal Liberation Front (ALF) or

²⁰ Wm. Robert Johnston. *Review of Fall 2001 Anthrax Bioattacks*. Available online: <<http://www.johnstonsarchive.net/terrorism/anthrax.html>>, 17 March 2005, accessed 28 August 2006.

²¹ "Terrorist Attack" in Tokyo. EmergencyNet NEWS Service (ENN). Emergency Response & Research Institute. Available Online: <<http://www.emergency.com/japanatk.htm>>, 20 March 1995, accessed 22 August 2006.

²² There are three types of exposure to BW: cutaneous (skin exposure), gastrointestinal (entering through the digestive system), and inhalation. In the case of the 2001 anthrax attacks a total of 22 individuals contracted either cutaneous anthrax (11 cases) or inhalational anthrax (11 cases), and 5 died (all from inhalational anthrax)

²³ Germplasm is the term used to describe the seeds, plants, or plant parts useful in crop breeding, research, and conservation efforts.

²⁴ Bruce K. Hope, *Using Fault Tree Analysis to Assess Bioterrorist Risks to the U.S. Food Supply*. Human and Ecological Risk Assessment. Boca Raton: Apr 2004. Vol.10, Iss. 2; 327 Pages.

²⁵ *Research and Extension Center*. University of Idaho. College of Agriculture, Aberdeen. <<http://www.uidaho.edu/aberndeen/index.htm>>, Aberdeen, Idaho. 2006, accessed 1 September 2006.

²⁶ Ecoterrorism is defined as terrorism or sabotage committed in the name of environmental causes. These groups also use the term ecotage or monkey-wrenching to describe their activities.

the Earth Liberation Front (ELF) whose primary motivation is not the destruction of America, but to actualize social change through direct action [terrorism]. On the other hand, human suffering and death may serve as a welcomed side effect for international terror organizations.

Attacking the Food Supply

In this type of attack, terrorists use non-zoonotic,²⁷ animal bioagents such as foot-and-mouth disease or crop diseases such as karnal bunt to adversely affect the marketability of agricultural commodities.²⁸ The advantage of this type of attack is two pronged; these bioagents are naturally occurring, making it difficult for law enforcement agencies to pinpoint terrorist activities and they spread rapidly making it difficult to quarantine a small number of affected crops or animals. This type of attack can be observed in the cattle industry, where 75% of the U.S. beef stock now passes through just 2% of the nation's feedlots.²⁹ The introduction of a biological agent in these feedlots could effectively wipe out large portions of the U.S. cattle industry for years and destroy the nation's meat export market for decades.

To better understand the impact of the loss of the beef industry, the U.S. has less than 10% of the world's cattle inventory, but produces nearly 25% of the world's beef supply. In the U.S., nine of 10 households, or 251 million people, eat beef at home at least once every two weeks. In 2004, 40% of the sandwiches served in restaurants across America were hamburgers; while chicken, the next closest competitor, was served to only 13% of sandwich consumers.³⁰ The impact would be equally devastating in the plant industry. For the 1993/94 crop year, exports accounted for an estimated 53% the total of U.S. rice production, 46 percent of our wheat

²⁷ A non-zoonotic pathogen is a disease of animals that cannot be transferred to humans.

²⁸ Bruce K. Hope, *Using Fault Tree Analysis to Assess Bioterrorist Risks to the U.S. Food Supply*. Human and Ecological Risk Assessment. Boca Raton: Apr 2004. Vol.10, Iss. 2; 327 Pages.

²⁹ Ibid.

³⁰ *Beef Bytes*. U.S. Department of Agriculture. Page 10.

and soybeans, 35 percent of our cotton and 20 percent of our corn.³¹ In 1929 there were 6.3 million farms in the U.S., but by 2001 that number dropped to 2.1 million.³² This consolidation of major U.S. farm land has led to 82% of U.S. corn exports controlled by three agribusiness firms.³³

Agribusinesses consolidation contributes to increased susceptibility to attack at any point in the food distribution chain. These possible points of attack, known as entry points,³⁴ present varying levels of risk along the distribution chain. In the “hoof-to-plate” food supply chain, the average pound of meat travels 1,000 miles stopping at poorly monitored stockyards, processing plants, and slaughterhouses, creating “entry point” targets for agroterrorists. Of these slaughter houses, almost 70% are located in a 200 square-mile area. For beef, three packing firms control 72% of the market; while in the pork industry, 4 packers control 57% of the market.³⁵

³¹ Mathew Shane and Lloyd Teigen. *Trade vital to U.S. agriculture*. AgExporter. Available online: <http://findarticles.com/p/articles/mi_m3723/is_n6_v6/ai_15494966>, June, 1994, accessed 3 November 2006.

³² Infoplease. Business and Finance. *Number of Farms, Land in Farms, and Average-Size Farm: United States, 1990–2005*. Available online: <<http://www.infoplease.com/ipa/A0883511.html>>, 2006, accessed 3 November 2006.

³³ O. Shawn Cupp. Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science. *Agroterrorism in the U.S.: Key Security Challenges for the 21st Century*. Mary Ann Liebert, Inc., Volume 2, Number 2, 2004. Page 2.

³⁴ The term “entry point” is used in Shawn Cupp’s article, *Agroterrorism in the U.S.: Key Security Challenges for the 21st Century*. In Bruce Hope’s, *Using Fault Tree Analysis to Assess Bioterrorist Risks to the U.S. Food Supply*, Mr. Hope uses the term “node” in describing the same type of location where pathogens can be introduced into the food supply chain.

³⁵ O. Shawn Cupp, Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science. *Agroterrorism in the U.S.: Key Security Challenges for the 21st Century*. Mary Ann Liebert, Inc., Volume 2, Number 2, 2004. Pg. 2.

Internal Threats

"If that hideousness foot-and-mouth disease (FMD) came here, it wouldn't be any more hideous for the animals — they are all bound for a ghastly death anyway. But it would wake up consumers. I openly hope that it comes here. It will bring economic harm only for those who profit from giving people heart attacks and giving animals a concentration camp-like existence. It would be good for animals, good for human health and good for the environment."

Ingrid Newkirk, People for the Ethical Treatment of Animals, President and Co-founder, 2001

Within the U.S. there are a growing number of organizations willing and capable of conducting acts of agroterrorism. Most notable of these groups are the Earth Liberation Front (ELF) and the Animal Liberation Front (ALF). According to ELF's literature, ELF defines its mission as, "Using real direct action in the form of economic sabotage...by inflicting as much economic damage as possible, the ELF can allow a given entity to decide if it is in their best economic interests to stop destroying life for the sake of profit."³⁶ In 1993, these two organizations issued a statement of alliance which provides ELF and ALF members additional resources and capabilities to carry out acts of domestic terrorism. The ALF, whose stated mission objective is to, "abolish institutionalized animal exploitation," claims responsibility for 34 acts of captured-animal release from testing laboratories and farms. In November of 2004, the ALF released 401 animals from the laboratories of the University of Iowa.³⁷ Although the FBI believes the ALF would not intentionally release infected animals into the ecosystem, the FBI believes it is possible because laboratories do not always mark cages. Most recently, ALF claimed responsibility for the April 22, 2005, release of laboratory animals from Louisiana State

³⁶ *Frequently Asked Questions about the Earth Liberation Front (ELF)*, Available online, <www.earthliberationfront.com>, 2001, accessed 15 November 2006.

³⁷ *Breaking News*. Animal Liberation Front. North American Animal Liberation Press Office. Available online, <<http://www.animalliberationpressoffice.org/>>, 2006, accessed 15 November 2006.

University³⁸. In addition to animal releases, in 1999, ALF members burned Childers Meat Processing Company in Oregon to the ground resulting in over \$350,000 damage.³⁹

In April of 2006, the DHS issued a flyer warning business of the threat they face from animal rights activists and ecoterrorists to include ELF and ALF; and according to the FBI, ELF is the “most serious domestic terrorism threat in the U.S.”⁴⁰ The FBI estimates damage from eco- and animal rights-extremists at over \$200 million in recent years and currently has over 150 open cases in this area. The increasing number of incidents of violence at farms, processing plants, research centers, and other business locations emphasize the need for better managing threats to our food and animal industries.⁴¹

External Threats

“We with God’s help call on every Muslim who believes in God and wishes to be rewarded to comply with God’s order to kill the Americans and plunder their money wherever and whenever they find it.”

Usama bin Laden
23 February 1998

Today, the Department of Homeland Security (DHS) focuses most of its efforts on port security and border enforcement; however, probably the most feared terrorist tactic is the destruction of the U.S. domestic food supply chain. Many intelligence sources believe that this type of attack is currently being planned by Jihadist such as al-Qaeda and other terror organizations.⁴² Documents captured in Afghanistan, now incorporated into the Harmony

³⁸ *Breaking News*. Animal Liberation Front. North American Animal Liberation Press Office. Available online, <<http://www.animalliberationpressoffice.org/>>, 2006, accessed 15 November 2006.

³⁹ Ibid

⁴⁰ *The Domestic Prospective*. U.S. Federal Bureau of Investigation. International Symposium on Agroterrorism. Available online, <<http://www.fbi-isa.org/presenters.html>>, May 3, 2005. Slides 22-24, accessed 25 September 2006.

⁴¹ Animal Agriculture Alliance. AG-Security Training Notice – Anti-Terrorism Training. *Protect Yourself from Agro-Terrorism*. Available online, <Ag-Security@Ag-Security.com>., accessed 8 August 2006.

⁴² Jim Kouri. *Terrorists Plot to Attack Americans Through Food Supply*. Available online, <<http://www.axcessnews.com/modules/wfsection/article.php?articleid=10665>>, July 31, 2006, accessed 15 August 2006.

Database,⁴³ clearly indicate that English-speaking individuals, working for al-Qaeda, are planning attacks on agriculture. In light of these findings, Senator Susan Collins, Chairman of the Committee on Government Affairs, testified that, “hundreds of pages of U.S. agricultural documents were recovered from the al-Qaeda caves in Afghanistan...a strong indication that terrorists recognize that our agriculture and food industry provides tempting targets.”⁴⁴ Additionally, a CIA report confirmed that, “the September 11 hijackers expressed interest in crop dusting aircraft, an effective and remarkably simple way to spread biological agents, including plant and animal diseases, over large areas.”⁴⁵

Other indicators point to the Jihadist interest in destroying the US economy through targeting multiple sectors—including agriculture. In January, 2003 British authorities found a recipe for ricin⁴⁶ and castor beans (ricin is a derivative of castor beans) in the London apartment of six North African immigrants, raising fears that al-Qaeda may be planning to disrupt water systems and food supplies. Again, these fears were heightened when, two months later, small amounts of ricin were found inside a locker at the Gare de Lyon train station in Paris.⁴⁷ As recently as September 6, 2006, President Bush announced that Khalid Sheikh Mohammed, the 9/11 attacks mastermind, provided “vital information on al Qaeda's efforts to obtain biological weapons,” to include the production of anthrax. Armed with this information, the CIA was able to capture Yazid and two of his principal assistants in the anthrax program.⁴⁸

⁴³ The Harmony Database is part of Project Harmony, which was began in 1997 as a method for foreign document exploitation (DOCEX) and translation. The database is currently maintained by the Army National Ground Intelligence Center.

⁴⁴ *Agroterrorism: A Threat to America's Breadbasket*, A statement made before the Committee on Governmental Affairs, Senate. Washington, U.S. Government Printing Office, 2003.

⁴⁵ Ibid

⁴⁶ Ricin is a deadly biological agent that can kill through ingestion or inhalation, there is no antidote or vaccine for ricin and even a small amount of this substance can kill.

⁴⁷ *Homeland Insecurity: Building the Expertise to Defend America from Bioterrorism*. Partnership for Public Service. Available online, <<http://www.ourpublicservice.org>>, 2003, accessed 8 August 2006.

⁴⁸ *President Discusses Creation of Military Commission to Try Suspected Terrorists*. U.S. President. Presidential News and Speeches. Washington, D.C., September 6, 2006. Available online: <<http://www.whitehouse.gov/news/#>>, accessed 7 September 2006.

Scope and Limits of the Study

According to the Office International des Epizooties (OIE), which is recognized by 162 member nations as being the world's premier agency in dealing with animal health issues, there are 15 'A List' pathogens which pose the greatest danger in terms of infection rates, infection severity and economic devastation.⁴⁹ One of those 15 pathogens, FMD, is considered by the FBI the "number one agroterrorism threat" to the U.S.⁵⁰

The OIE also maintains a 'B List' of 90 pathogens which pose a less significant threat than 'A List' pathogens. Two more commonly known pathogens on this list are anthrax and Bovine Spongiform Encephalopathy (BSE), more commonly known as Mad Cow Disease. Anthrax is considered by many researchers the most likely pathogen to be used as a biological weapon against human targets, as seen in the September 18, 2001 attacks which cost the U.S. five lives and over \$1 billion.⁵¹ In 2003, a single cow tested positive for BSE in Washington State, resulting in the closure of beef markets in Japan, Mexico, South Korea and Canada and a \$6 billion loss to the beef industry.⁵² More recently the U.S. Air Force Counterproliferation Center at Maxwell Air Force Base concluded that an aerosolized release of biological agents over a moderately sized suburban area would result in economic losses estimated between \$477.7

⁴⁹ *Agricultural Threats – Livestock and Crops*. U.S. Federal Bureau of Investigation. International Symposium on Agroterrorism. Available online, <<http://www.fbi-isa.org/presenters.html>>, May 3, 2005. Slide 31, accessed 25 September 2006.

⁵⁰ *Weaponization of Biological Pathogens*. U.S. Federal Bureau of Investigation. International Symposium on Agroterrorism.. Available online, <<http://www.fbi-isa.org/presenters.html>>, May 3, 2005. Slide 33, accessed 25 September 2006.

⁵¹ Wm. Robert Johnston., *Review of Fall 2001 Anthrax Bioattacks*. Available online: <<http://www.johnstonsarchive.net/terrorism/anthrax.html>>, 17 March 2005, accessed 9 September 2006.

⁵² Jimmie Presley. *Mad Cow to Cost Firms Almost \$6 Billion*. Organic Consumers Association, Available online: <<http://www.organicconsumers.org/madcow/billion225-4.cfm>>, February 25, 2004, accessed 9 September 2006.

million per 100,000 persons exposed to \$26.2 billion per 100,000 persons exposed depending on the pathogen released.⁵³

Based on these historical and estimated consequences of the biological attacks depicted above, the consequences of an agroterrorism attack are predicted as similar to those of bioterrorism. An agroterror attack would produce effects in many areas key to U.S. interests to include:

1. Psychological – panic and fear of additional attacks.
2. Financial – billions of dollars lost directly (as a result of the attack) and indirectly (for restoration and prevention efforts, trade losses, etc.)
3. Government – loss of faith in the government to provide safe, plentiful and relatively cheap food supply.
4. State's rights – the control of the National Guard, borders and highways under possible Federal quarantine conditions.

This study focuses broadly on agroterrorism as a subset of bioterrorism and specifically on potential consequences of an attack on the meat industry using foot-and-mouth disease (FMD). Because of the lack of large scale agroterror attacks, exercises and historical case studies of bioterrorism attacks (on humans) are used to judge similarities in response, economic impact and magnitude between bioterrorism and agroterrorism. Using this information, the researcher will describe deficiencies in our current legislation and systems and make recommendations to better prepare for an agroterror attack.

⁵³ Arnold F. Kaufmann, Martin I. Meltzer and George P. Schmid. *The Economic Impact of a Bioterrorist Attack: Are Prevention and Postattack Intervention Programs Justifiable?* The War Next Time: Countering Rogue States and Terrorists Armed with Chemical and Biological Weapons. Page 195.

Chapter 3: America's Greatest Threat

"The negative impact on the economy and exports is the biggest risk associated with an FMD outbreak. This means that the \$3.1 billion in beef exports and the \$1.3 billion in pork exports each year would vanish unless we control this disease very quickly."

Federal Bureau of Investigation, International Symposium on Agroterrorism
May 3, 2005

Foot-and-Mouth Disease (FMD)

Foot-and-mouth disease is an extremely contagious virus that affects cloven-hoofed animals and other ruminants.⁵⁴ Although this non-zoonotic virus will not affect humans, people can spread the virus to animals through cross-contamination. FMD can remain in human nasal passages for as long as 28 hours and can be carried on soiled footwear, clothing and other items. While numerous strains exist, some are more virulent than others. The disease is endemic to much of Africa, Asia and South America, as well as parts of Europe.⁵⁵

After an incubation period of 1-21 days, the disease produces lesions in the mouth and on the feet of infected animals, among other symptoms. Although the disease is infrequently fatal, it can result in enormous losses in productivity and severely reducing the production of meat and milk. Due to the fact that FMD spreads widely and rapidly and because it has grave economic as well as physical consequences, FMD is one of the most dreaded animal diseases for livestock owners.

FMD is resistant to common disinfectants, and can persist for over a year in infected premises and up to 12 weeks on clothing or in feed. Not only can humans pass FMD to animals through causal contact, the virus can live in uncooked meat from infected animals, dairy products from infected animals, and it can travel in the air for up to 40 miles over the land and up to 180

⁵⁴ Ruminants are any of various hoofed, even-toed, usually horned mammals of the suborder Ruminantia, such as cattle, sheep, goats, deer, and giraffes, characteristically having a stomach divided into four compartments and chewing a cud consisting of regurgitated, partially digested food.

⁵⁵ O. Shawn Cupp, *Agroterrorism in the U.S. Supporting and Responding to Domestic Incidents* A430. Command and General Staff College, Fort Leavenworth, KS. May 16, 2002. Slide 17.

miles over water.⁵⁶ Birds can carry the disease in their digestive tracts and thus spread it to new locations. FMD is susceptible to changes in Ph, sunlight, and heat. Cooking will destroy the virus in meat, however freezing or pickling may not kill the virus.⁵⁷ There is no universal vaccine for FMD, since there are seven different types and 60 different subtypes and vaccines must match the type and subtype present. Also, blood tests cannot differentiate vaccinated animals from infected animals, so both will eventually be eliminated if an outbreak takes place.⁵⁸ While, current vaccination technology does protect animals from the clinical symptoms of FMD, a vaccinated animal can still carry and spread the disease to non-vaccinated animals.⁵⁹

A recent study by the National Defense University substantiates the FBI claim that FMD is the number one agroterrorism threat stating, “Even a limited outbreak of FMD...could have a \$2 billion financial impact and wide-ranging effects on society, including the impairment of military deployment and readiness.”⁶⁰ Two recent cases of FMD in Taiwan and Great Britain offer some perspective as to what the U.S. may face.

⁵⁶ *Foot and Mouth Disease Frequently Asked Questions*. University of California: Agriculture and Natural Resources. News and Information Outreach: Governmental and External Relations. Available online, <<http://news.ucanr.org/newsstorymain.cfm?story=443#What%20would%20FMD%20cost%20in%20California?>>, March 16, 2001, accessed 8 November 2006.

⁵⁷ *Foot-and-Mouth Disease Spreads Chaos in Pork Markets*. Available online, <<http://www.fas.usda.gov/dlp2/circular/1997/97-10LP/taiwanfmd.htm>>, October 1999, accessed 8 November 2006.

⁵⁸ *Foot and Mouth Disease Frequently Asked Questions*. University of California: Agriculture and Natural Resources. News and Information Outreach: Governmental and External Relations. Available online, <<http://news.ucanr.org/newsstorymain.cfm?story=443#What%20would%20FMD%20cost%20in%20California?>>, March 16, 2001, accessed 8 November 2006.

⁵⁹ *Foot-and-Mouth Disease: Information, News and Resources*. Available online, <<http://www.fmdinfo.org/aboutfmd.aspx>>, accessed 8 November 2006.

⁶⁰ *Agroterrorism: A Threat to America's Breadbasket*, A statement made before the Committee on Governmental Affairs, Senate. Washington, U.S. Government Printing Office, 2003.

FMD in Taiwan

“The outbreak of foot-and-mouth disease among Taiwan's swine herd has created turmoil in world pork markets. This outbreak has devastated the Taiwanese industry and effectively eliminated Japan's largest, single source of imported pork.”

United States Department of Agriculture, Foreign Agriculture Service
October 1997

In 1997 one FMD infected pig imported from Hong Kong caused an outbreak in Taiwan resulting in an immediate cost to farmers of \$4 billion due to the embargos placed on Taiwan from trade partners. Following the embargo, Taiwan's destruction of infected herds and vaccination of non-infected herds resulted in an estimated cost of \$15 billion.⁶¹ Prior to the outbreak, Taiwan was the third largest pork exporter in the world behind the United States and Denmark. Taiwanese pork exports were roughly 30% of total pork production, 95% of which were exported to Japan. By the time officials recognized the FMD outbreak, 29 farms were contaminated; over the course of the following weeks a total of nearly 150,000 cases were reported affecting 717 farms. As a result of the FMD outbreak, nearly one-third of the swine herd had to be destroyed and consumer market prices for pork dropped to 15 – 20% below the cost of production.⁶²

As part of the government response to the disaster, the Taiwanese destroyed all infected herds and vaccinate non-infected herds. In 1997, Taiwan had only 40,000 doses of vaccine on hand to immunize a herd estimated at 10 million head. The combined efforts of destroying infected herds and immunizing others resulted in a dramatic drop in infection rates, and within four months the swine population was relatively FMD free. In addition to their immediate steps to eradicate the disease, the Taiwanese government maintained a 100% immunization policy for

⁶¹ *Agroterrorism: A Threat to America's Breadbasket*, A statement made before the Committee on Governmental Affairs, Senate. Washington, U.S. Government Printing Office, 2003.

⁶² *Foot-and-Mouth Disease Spreads Chaos in Pork Markets*. Available online, <<http://www.fas.usda.gov/dlp2/circular/1997/97-10LP/taiwanfmd.htm>>, October 1997, accessed 8 November 2006.

the following two years as well as training programs for farmers and slaughter houses in preventing further outbreaks. Although the Taiwanese acted quickly to stop the outbreak and restore the industry, Taiwan almost completely lost their Japanese market forcing many small farm operations and processing plants out of business. Ultimately, nearly 4 million pigs in infected herds had to be destroyed.⁶³

FMD in Great Britain

In 2001, Great Britain suffered an outbreak of FMD which led to the destruction of over 4 million animals (597,000 cattle, 3,219,000 sheep, 142,000 pigs, 2000 goats, 1,000 deer, 1,000 other),⁶⁴ as a result of feeding contaminated animal renderings to swine. Within three weeks of the first outbreak, over 50 locations throughout Great Britain tested positive for the disease, and although only 2,026 cases were actually confirmed between February and September of 2001, the government had to destroy entire herds in order to fully control the spread of the disease. Even this naturally occurring outbreak took its toll on Great Britain's food, agriculture and tourist industries. Estimates place the loss in the food and agriculture industry as high as \$5 billion with an equal loss to the tourism industry.⁶⁵

Lessons for the United States

The lesson from the Taiwanese and British experience is—early detection reduces mortality and morbidity rates—but is the U.S. prepared to handle the workload and confusion of those first critical days? In Britain, public health authorities were quickly overtaken with efforts to test, identify and contain the disease. Initially, efforts to destroy diseased animals were largely

⁶³ *Foot-and-Mouth Disease Spreads Chaos in Pork Markets*. Available online, <<http://www.fas.usda.gov/dlp2/circular/1997/97-10LP/taiwanfmd.htm>>, October 1997, accessed 8 November 2006.

⁶⁴ *Foot-and-Mouth Disease: 2001 Outbreak*. Available online, <<http://www.avma.org/pubhlth/fmd/default.asp>>, accessed 8 November 2006.

⁶⁵ *Homeland Insecurity: Building the Expertise to Defend America from Bioterrorism*. Available online, <<http://www.ourpublicservice.org>>, 2003, accessed 20 September 2006.

under the control of public health agencies, but as the volume of animals to be burned or buried reached into the millions, the British Army and private contractors were called to assist with the mass destruction of animal remains. Additionally, when FMD was first discovered, Britain had only enough laboratory capacity to conduct 400 serum tests per week for the presence of FMD. As a result of increased cooperation within governmental departments, by November 2001, testing capacity reached 200,000 tests per week, but by then, the outbreak was already under control. This massive increase in capabilities was key in allowing the government to declare areas free of contamination and lift travel restrictions.⁶⁶

The last outbreak of FMD in the U.S. was in 1929; during the outbreak more than 200,000 animals were slaughtered at a cost to the state of California of \$4 million. According to a recent study, there are currently 1.5 million dairy cows in California, and an FMD outbreak could cost the state up to \$14 billion.⁶⁷ Because FMD is prevalent on every continent except North America, Australia and Antarctica, controlling outbreaks of FMD within the U.S. is one of the keys to U.S. dominance of meat markets and production generating over \$50 billion annually.⁶⁸

In 2001, the ever present threat of a FMD outbreak became evident at a Kansas cattle sales barn. During the auction, a veterinarian noticed that some cattle had lesions on their tongues—a symptom of FMD. Once information about this discovery was released to state and federal authorities, the cattle futures market plummeted. Fortunately, it turned out that the lesions on the tongue were caused by eating rough hay that contained thorns. Due to the panic that

⁶⁶ Homeland Insecurity: Building the Expertise to Defend America from Bioterrorism. Available online, <<http://www.ourpublicservice.org>>, 2003, accessed 20 September 2006.

⁶⁷ *Keep Foot and Mouth Disease out of the USA: 1924-1929 FMD Strikes California*. Current Science and Technology Center. Stories. Available online, <<http://www.mos.org/cst-archive/article/361/1.html>>. 2006, accessed 8 November 2006.

⁶⁸ O. Shawn Cupp, *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science. Agroterrorism in the U.S.: Key Security Challenges for the 21st Century*. Mary Ann Liebert, Inc., Volume 2, Number 2, 2004. Pg. 4.

ensued, the cattle industry lost an estimated \$50 million.⁶⁹ Although the U.S. has remained FMD free since 1929, government and private industry must understand the lessons from Taiwan and Great Britain in order to preclude a pandemic outbreak of FMD in the U.S.

⁶⁹ O. Shawn Cupp, Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science. *Agroterrorism in the U.S.: Key Security Challenges for the 21st Century*. Mary Ann Liebert, Inc., Volume 2, Number 2, 2004. Page. 4.

Chapter 4: The Complexity of Legislation

“As a Congressman from Mississippi, it gravely disturbs me that it is taking so long to look at ways to ensure our food supply chain is adequately protected from a domestic terrorist attack...I know all too well that local and state agricultural agencies are not equipped with the essential tools they need to counter an attack on our livestock or fields. We must set things right and make securing our nation’s food supply a priority. It is imperative that we do all we can to assure the American people that we are doing everything possible to protect them from an agroterrorism attack.”

Rep. Bennie G. Thompson
Subcommittee Hearing on Agroterrorism
25 May 2005

How Federal Legislation Affects Agroterrorism

Two of the major criticisms of our counter agroterrorism efforts are the lack of clear guidance from the federal government and the lack of a single federal agency to provide command and control after an agroterror attack. Part of this problem arises from the federal government’s definition of a weapon of mass destruction (WMD). According to title 50, chapter 40 of the U.S. Code (Defense Against Weapons of Mass Destruction Act), WMD is defined as:

“any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of - (A) toxic or poisonous chemicals or their precursors; (B) a disease organism; or (C) radiation or radioactivity.”⁷⁰

By defining WMD as a weapon or device which causes death to “people,” the law fails to take into account the significant impact the release of biological agents, which only kills plants or animals, would have on our economy and security.

Additionally, three Presidential Decision Directives (PDD) 39 (Counterterrorism Policy), the unclassified portion of PDD 62 (Protection Against Unconventional Threats to the Homeland and Americans Overseas) and PDD 63 (Critical Infrastructure Protection), delineate U.S. policy on counter-terrorism and critical infrastructure. Neither PDD 39 nor 62 list agriculture as a possible terror target, and PDD 63 fails to list agriculture as critical infrastructure or place

⁷⁰ *Defense Against Weapons of Mass Destruction, Title 50, Chapter 40*. Available online: <<http://www.law.cornell.edu/uscode>>, accessed 20 October 2006.

responsibility for counter-agroterrorism on a single agency.⁷¹ Counter to the three presidential directives on terrorism, the National Strategy for Homeland Defense (NSHD) lists agriculture as critical infrastructure, but the Strategy for Homeland Defense and Civil Support (SHDCS), a document produced by the Department of Defense (DoD), makes no mention of agroterrorism or agriculture.⁷² On January 30, 2004, President Bush signed Homeland Security Presidential Directive (HSPD) 9, *Defense of United States Agriculture and Food*. In this directive, agriculture is finally listed as critical infrastructure and recognized as a potential terrorist target, but responsibility for agriculture security is still divided between the Department of Homeland Defense, Department of Agriculture, Department of Health and Human Services, Department of the Interior, the Environmental Protection Agency and the Centers for Disease Control and Prevention.⁷³ In addition, the current version of the National Response Plan (NRP) lists a “Food and Agriculture Incident” as one of the top seven possible incidents which might occur within the U.S., yet the annex did not exist until July 17, 2006.⁷⁴

The National Strategy for Homeland Defense (NSHD) defines homeland security as, “a concerted national effort to prevent terrorist attacks within the United States, reduce America’s vulnerability to terrorism, and minimize the damage and recover from attacks that do occur.”⁷⁵ When defining roles and responsibilities for different agencies, the NSHD assigns the Department of Agriculture (USDA) as the primary agency responsible for agroterrorism, but separates out bioterrorism as a separate category of attack and assigns responsibility to the Centers for Disease Control and Prevention (CDC) and the National Institute of Health (NIH) which are subordinate

⁷¹ See Presidential Decision Directives 39, 62 and 63.

⁷² *Strategy for Homeland Defense and Civil Support*. U.S. Department of Defense. Washington, D.C., June 2005.

⁷³ *Defense of United States Agriculture and Food*. Homeland Security Presidential Directive 9. Washington, D.C., January 30, 2004.

⁷⁴ *Food and Agriculture Incident Annex*. National Response Plan. U.S. Department of Homeland Security. Washington, D.C. Available online: <http://www.dhs.gov/xlibrary/assets/nrp_foodagincidentannex.pdf>, 10 pages, accessed 17 July 2006.

⁷⁵ *National Strategy for Homeland Security*. U.S. Department of Homeland Security. Washington, D.C., July 2002. Pg. vii.

agencies to the Department of Health and Human Services (HHS).⁷⁶ This separation coincides with the aforementioned division of the classification of WMD as causing death to people, as opposed to plants or animals.

According to the Army's senior leader handbook, *How the Army Runs*, the "DoD would provide support to federal, state and local responders when civilian capacities become overwhelmed."⁷⁷ With this broad statement in mind, in the case of an outbreak of FMD, the DoD could be called upon to assist state and other federal agencies in the protection of critical agriculture infrastructure, civil liberties or to assist with eradication efforts. This is similar to the case in Great Britain where, after an outbreak of FMD, the military became the workhorse in their eradication efforts. In the U.S., this role was tested in the 2004 High Plains Guardian exercise where members from U.S. Northern Command (NORTHCOM), U.S. Fifth Army, and the U.S. Army Veterinary Corps joined the Department of Homeland Defense, the Federal Emergency Management Agency (FEMA) and the Kansas National Guard to participate in a fictional FMD outbreak in Kansas.⁷⁸ Results of the exercise proved the DoD could provide support in critical areas, such as engineering, policing and logistics.⁷⁹

Agriculture & Health and Human Services

As depicted in the Dark Winter exercise, a single introduction of smallpox in Oklahoma City blossomed into several million deaths across the U.S. and a major disruption in interstate commerce as state governors, exercising their state's rights, using their National Guard soldiers,

⁷⁶ *National Strategy for Homeland Security*. U.S. Department of Homeland Security. Washington, D.C., July 2002. Page 13.

⁷⁷ *How the Army Runs: A Senior Leader Reference Handbook 2003-2004*. U.S. Department of the Army. U.S. Army War College, Pennsylvania, 17013. Pg. 463.

⁷⁸ *Kansas National Guard Practices Agroterrorism Response*. Kansas State University. K-State Media Relations and Marketing. Available online, < <http://www.mediarelations.k-state.edu/WEB/News/NewsReleases/biosecurity82004.html>>, August 20, 2004, accessed 20 August 2006.

⁷⁹ Ibid.

closed their borders in an attempt to protect their populations. Whether the attacks were on humans as depicted in *Dark Winter* or an act of agroterror against the meat industry as depicted in *High Plains Guardian*, an attack of this nature could cripple our economy, require geographic quarantines and cause massive social chaos. In response to such an attack, more than 30 government agencies (local, state and federal) may be involved, five of which play a key role in mitigating the effects of an agroterror attack: the Centers for Disease Control and Prevention (CDC), the National Institute of Allergy and Infectious Diseases (NIAID), the Food and Drug Administration (FDA), the Animal and Plant Health Inspection Service (APHIS) and the Food Safety and Inspection Service (FSIS). All five of these agencies belong to two departments, the Department of Health and Human Services (HHS) and the Department of Agriculture (USDA).

In the recently released *Food and Agriculture Incident Annex*, there is no one agency given overall responsibility for reacting to a food or agriculture attack. According to the plan, the USDA and HHS are given nearly identical responsibilities and are to serve as co-equal, supported agencies.⁸⁰ The reasons cited for this duplication of effort are the nuanced, statutory authorities of each department, for example, the Department of Health and Human Services, through the Food and Drug Administration (FDA), has statutory authority for all domestic and imported food except meat, poultry, and egg products, which are under the authority of the Department of Agriculture, Food Safety and Inspection Service (FSIS). In addition to the primary responsibilities being divided between the two departments, 14 other federal agencies share the responsibility of reacting to an agricultural attack.

⁸⁰ *Food and Agriculture Incident Annex*. National Response Plan. U.S. Department of Homeland Security. Washington, D.C. Available online: <http://www.dhs.gov/xlibrary/assets/nrp_foodagincidentannex.pdf>, Page 3, accessed 17 July 2006.

Agency Roles and Responsibilities Matrix*																	
Function	ARC	DHS	DOC	DOD	DOE	DOI	DOJ	DOL	DOS	DOT	EPA	GSA	HHS	USAID	USDA	USPS	VA
Coordination		■											■		■		
National Defense and security				■													
Rapid ID of agent		■											■		■		
Laboratory Confirmation					■								■		■		
Outbreak Transmission Information						■							■		■		
Control and Contain Outbreak													■		■		
Decontamination and Disposal											■		■		■		
Food Safety and Food Defense													■		■		
Public Health													■		■		
Public Information													■		■		
Law Enforcement Issues		■					■						■		■		
Economic, Market Issues			■					■	■						■		
Support Services (Feeding, Facilities, Counseling, Transport)	■			■	■					■			■		■	■	■
International Coordination										■				■			

Figure 1: Agency Roles and Responsibilities Matrix for a Food and Agriculture Incident

As seen in figure 1, HHS and USDA have almost identical capabilities and responsibilities in an agriculture incident, the consolidation of these departments would streamline incident response and reduce duplication of laboratories, databases and personnel required to sample and test for possible pathogens.

Medical Preparedness

In a March 2005 Government Accounting Office (GAO) report, the GAO found major flaws in America's ability to face an agroterrorist attack. Their most significant finding was that the USDA would not be able to deploy animal vaccines within 24 hours of an outbreak, a requirement outlined in HSPD-9. The GAO cited several reasons for this deficiency; the only vaccines currently stored in the United States are for just a few of the strains of FMD. These vaccines are not stored ready-to-use and would have to be sent to the United Kingdom for activation.⁸¹ In addition to the lack of vaccines, only limited steps have been taken to integrate the laboratory database networks of the USDA and HHS. Because of this shortcoming, USDA

⁸¹ *Homeland Security: Much is Being Done to Protect Agriculture from a Terrorist Attack, but Important Challenges Remain.* U.S. Government Accountability Office. Washington, D.C., March 2005. Page 37, accessed 20 September 2006.

lacks the ability to look at diagnostic data from across the country, detect trends, and implement a response. Additionally, HHS may not receive timely information from USDA on agricultural diseases that could spread to humans.

Foreign Animal Diseases

In addition to the meager information flow between HHS and USDA, the USDA suffers from veterinarians not trained to identify foreign animal diseases (FAD). A 2004 report produced for the USDA states that while all U.S. veterinary schools offer information about foreign animal diseases, only 26% of graduates take the course specifically designed to train veterinarians in detecting the signs of FAD.⁸² Furthermore, foreign animal disease training is not required for USDA accreditation. This accreditation is intended to provide a group of highly trained individuals who will maintain effective FAD surveillance; however, the accreditation process does not require veterinarians to demonstrate their ability to recognize or diagnose basic clinical signs of FAD. Of the 80% of U.S. veterinarians who are USDA accredited, 74% work in private veterinary clinics where FAD are not present. In fact, there are only roughly 5,000 veterinarians working in the public sector who maintain surveillance of FAD.

Shortages in Researchers

A recent study by the non-profit, Partnership for Public Service that examined the Federal Government's ability to defend against a bioterrorist attack concluded that the federal government would be unable to adequately respond in the case of a massive BW attack. This inability to respond is primarily due to the lack of qualified scientists and medical experts within HHS and the USDA. In the 2001 anthrax attacks, which killed only five people, the CDCs limited resources were heavily taxed in their attempt to respond to the attacks. At the height of the

⁸² U.S. Government Accountability Office. *Homeland Security: Much is Being Done to Protect Agriculture from a Terrorist Attack, but Important Challenges Remain*. Washington, D.C., March 2005. Page 28.

attacks, “agency employees were working around the clock, sometimes sleeping on mattresses placed in laboratories, to complete the work needed to respond to both the real cases, as well as the thousands of hoaxes.”⁸³ In about 30 days, the CDC processed more than 5,400 anthrax related specimens in internal labs but was forced to outsource over 70,000 additional specimens to external labs. As a result of this limited attack, laboratories operating at capacity would not have been capable of dealing with a second crisis and the CDC could not address other public health issues.

Evidence from the 2001 anthrax attacks, the Dark Winter exercise and the Partnership for Public Service study suggests that a larger BW attack would quickly overwhelm our current systems. As the exercise Dark Winter proved, politicians are unfamiliar with the characteristics of bioterrorist attacks. Decisions made in the early stage of the smallpox outbreak led to inefficiencies in response and failure to control the situation. One of the major reasons for political unfamiliarity is the lack of qualified scientists and veterinarians in government laboratories. Many key positions within USDA and HHS remain unfilled, including experts trained in the fields of genetics, foreign animal disease, infectious disease medicine, bacteriology, microbiology, pharmacology, epidemiology and the physics of aerosol attacks.⁸⁴ While the government has invested heavily in first responders like police officers, firefighters and rescue workers, far fewer resources have been allocated by the federal government for medical and scientific experts. Several reasons exist for the shortage of medical and scientific experts working in the federal government. The main reasons cited by the Partnership for Public Service study are the rigidity of the government pay systems which is geared less to outstanding performance than to longevity in service and to what the study called the “byzantine hiring

⁸³ *Homeland Insecurity: Building the Expertise to Defend America from Bioterrorism*. Partnership for Public Service. Available online, <<http://www.ourpublicservice.org>>, 2003. Page 12, accessed 20 September 2006.

⁸⁴ *Report Calls U.S. Agencies Understaffed for Bioterror*. Partnership for Public Service. Available online, <http://www.ourpublicservice.org/pressroom/pressroom_show.htm?doc_id=186572>, July 6, 2003, accessed 20 September 2006.

process" used by the federal government.⁸⁵ This shortage is most readily seen in the lack of federal assistance in developing emergency response plans to deal with agroterrorism. To assist states in this planning the USDA has established 14 Area Emergency Coordinator positions responsible for animal matters and two Regional Emergency Coordinator positions responsible for plant matters, yet many of the positions remain vacant. According to the GAO report, federal and state officials stated that, even if the vacancies were filled, the current number of emergency coordinators is insufficient, as each coordinator is responsible for up to 6 states on the animal health side and 27 states on the plant side.⁸⁶

National Guard in Homeland Defense

Between 1945 and the 1980's, the Army National Guard (ARNG) played a reduced role in U.S. defense. Seen as the strategic deterrent against Russian aggression, National Guard troops played almost no role in the Vietnam conflict. In 1989, Congress approved \$40 million to fund National Guard soldiers assisting law enforcement in the War on Drugs. States developed drug interdiction plans designed to use ARNG soldiers and equipment and the Defense Department was given authorization to provide up to 4,000 Guard soldiers nationwide at any given time. As the popularity of ARNG soldiers participating in the drug war increased, so did the missions. In 1990, Guard troops participated in over 5,000 missions resulting in 1,318 arrests, the eradication

⁸⁵ *Report Calls U.S. Agencies Understaffed for Bioterror*. Partnership for Public Service. Available online, <[http:// www.ourpublicservice.org/pressroom/ pressroom_show.htm?doc_id=186572](http://www.ourpublicservice.org/pressroom/pressroom_show.htm?doc_id=186572)>, July 6, 2003, accessed 17 July 2006.

⁸⁶ *Homeland Security: Much is Being Done to Protect Agriculture from a Terrorist Attack, but Important Challenges Remain*. U.S. Government Accountability Office. Washington, D.C., March 2005. Page 32.

of 6.7 million marijuana plants, confiscation of \$18 million in drug money, and the seizure of 34,000 pounds of cocaine.⁸⁷

The remainder of the 1990's would see increased diversity in ARNG missions beginning with Army Chief of Staff, Gen. John M. Shalikashvili's "selective engagement" policy. The concept of selective engagement was to establish direct military-to-military contacts with foreign armies, continue participation in counter-drug and counterterrorism programs, conduct humanitarian relief operations, and take a more active role in international peacekeeping.⁸⁸ Since the inception of the selective engagement policy, ARNG units from every state have participated in peace keeping and nation building operations around the globe.

In addition to these new missions for the ARNG, the 1990's proved to be busy times for the National Guard in their Homeland Defense role. Following the Rodney King beating trials in April 1992, widespread violence and urban rioting in Los Angeles forced California Governor Pete Wilson to call out 10,336 California Guardsmen to restore order to Los Angeles. Other missions, such as disaster relief, soon became regular missions for National Guard soldiers. Florida's 1992, Hurricane Andrew called for 6,000 ARNG soldiers, while the Great Flood of 1993 resulted in the mobilization of nearly 8,400 Guard troops from the Midwestern states.

A third new mission arose out of the 1990's – domestic terrorism. The 1993 World Trade Center bombing by Islamic fundamentalists followed shortly by the Branch Davidian incident in Waco, Texas brought terrorism to American shores. Then on April 19, 1995, separatist Timothy McVay exploded a truck bomb outside of the Alfred P. Murrah Federal

⁸⁷ John W. Vessey Jr., General. *I am the Guard: A History of the Army National Guard, 1636-2000*. Available online: <http://www.arng.army.mil/guard_docs/presentations/guardhistorybook.pdf>. Page 294, accessed 15 November 2006.

⁸⁸ John Krenson. *Wherefore the National Guard? One Hand Clapping*. Available online: <<http://www.donaldsensing.com/index.php/2005/05/23/wherefore-the-national-guard/>>, 23 May 2005, accessed 15 November 2006.

Building in downtown Oklahoma City injuring over 400 and killing 168.⁸⁹ For the first time, National Guard troops from the Oklahoma National Guard were engaged as first responders to an attack on U.S. soil. While the Oklahoma City bombing was still fresh in the minds of Americans, in 1996, over 13,000 ARNG troops participated in the security of the Summer Olympic Games in Atlanta. Despite their presence, one person was killed in a pipe bomb explosion during an evening concert.⁹⁰

New Roles and Capabilities

With the increased scope and diversity of missions the National Guard assumed in the 1990's, new legislation changed the way National Guard soldiers would react to natural disasters and homeland defense. After Hurricane Andrew and the Mississippi River flooding, states realized they could not adequately react to every situation alone. State governors entered into Emergency Mutual Aid Compacts (EMAC)⁹¹ which allowed for the deployment of troops across state lines and gave legal authority to provide regional disaster responses. Again in 1996, new legislation was passed giving the DoD the new mission of domestic antiterrorism.⁹² This mission authorized the DoD to respond to terrorist acts employing weapons of mass destruction against the civilian population. In the event of a terrorist attack, ARNG would provide a variety of communications, medical and nuclear, biological or chemical (NBC) response capabilities. As a

⁸⁹ John W. Vessey Jr., General. *I am the Guard: A History of the Army National Guard, 1636-2000*. Available online: <http://www.arng.army.mil/guard_docs/presentations/guardhistorybook.pdf>. Page 309, accessed 15 November 2006.

⁹⁰ Ibid. Page 309.

⁹¹ Forty-six states and two territories participate in EMAC (AL, HI, WY, CA do not participate).

⁹² John E. Peters. Congressional Action, Public Attitudes and Task Areas. RAND. *Understanding Homeland Security*. Available online: <<http://www.fathom.com/course/21701714/session3.html>>, 2006. Session 3, accessed 15 November 2006.

result of these enhanced capabilities, in nearly half of the States, the state Adjutant General (AG) is the primary executive for emergency management.⁹³

The National Guard Today

Traditionally the Army National Guard has had two missions; a federal military mission (Title 10) and a state military mission (Title 32).⁹⁴ Since 9/11, the National Guard has been heavily tasked, providing over 368,500⁹⁵ Army National Guardsmen in state and federal military missions.⁹⁶ Of the 368,500 troops provided by the National Guard, over 240,000 were activated for direct participation in Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) (Title 10). During the same time period, 50,000 troops responded to Hurricanes Katrina and Rita, 7,000 to airport security, 6,000 to border security and a myriad of smaller domestic incidents (Title 32). With today's increased threat to the homeland, the National Guard needs to change once again to meet these security challenges.

Currently the National Guard consists of: eight divisions (seven heavy and one light), 15 enhanced Separate Brigades, 17 artillery brigades, two Special Forces Groups and three strategic brigades (31st SAB, 92nd SIB, and the 207th Scout Group). The force composition of the ARNG is 52% combat, 17% combat support, 22% combat service support, and 9% other.⁹⁷ For the National Guard to maintain an effective fighting force as well as to protect the homeland in

⁹³ John W. Vessey Jr., General. *I am the Guard: A History of the Army National Guard, 1636-2000*. Available online: <http://www.arng.army.mil/guard_docs/presentations/guardhistorybook.pdf>. Page 309, accessed 15 November 2006.

⁹⁴ U.S.C. Title 10 gives authorization for all U.S. military services under the command of the President of the United States. U.S.C. Title 32 provides each state the authorization to raise a militia, currently known as the National Guard under the command of the State Governor.

⁹⁵ Vaughn, Clyde A. Lieutenant General. National Guard Bureau. *Serving a Nation at War: At Home and Abroad*. Available online: <<http://www.ngb.army.mil/2007%20Posture%20Statement/vaughn.html>>, accessed 20 September 2006.

⁹⁶ Included in the National Guard deployment numbers are: Operation Noble Eagle, border security, Olympic security, airport security, OEF-Afghanistan, Horn of Africa, Guantanamo Bay, Kosovo Forces (NATO), U.S. Army Europe (force protection), Operation Desert Spring, Operation Iraqi Freedom, Hurricane Katrina, Hurricane Rita and Multi-National Force Observers- Sinai.

⁹⁷ *Army National Guard*. Global Security. Available online: <<http://www.globalsecurity.org/military/agency/army/arng.htm>>, May 23, 2005, accessed 20 September 2006.

response to terrorism, the composition of the Guard must change to provide the engineering, medical, logistics and disaster response capabilities necessary in any disaster. This need for a new Guard was illustrated in a recent FMD outbreak exercise in Kansas.

Changes for Homeland Defense

In July of 2004, The National Agricultural Biosecurity Center (NABC) at Kansas State University (KSU) conducted a simulation exercise known as, High Plains Guardian. This simulation exercise had two primary purposes: (1) Evaluate the role of the Kansas National Guard (KNG) and Department of Defense personnel in assisting civil authorities with a foot-and-mouth disease (FMD) outbreak and (2) assist emergency managers with refining the state's foreign animal disease (FAD) emergency plan.⁹⁸ By exercise end, several roles were identified as suitable for KNG soldiers, while other roles were identified as not suitable for KNG because of lack of equipment or training. Based on the resources apportioned to a typical state's Guard, Army training, and a robust quantity of personnel, KNG would play a critical role in border control, quarantine, and the disposal of animal carcasses at approved burial locations. KNG soldiers would also provide support in the areas of transportation and decontamination, but would not participate in surveillance or animal euthanizing.⁹⁹ Key to the lessons of High Plains Guardian is the type of missions expected from KNG troops. The engineering, policing, logistics and response missions are critical capabilities for DoD to provide not only in an agroterror incident, but in any homeland disaster.

⁹⁸ Kansas, Office of the Adjutant General. *High Plains Guardian After Action Report*. Topeka, Kansas, July 30-31, 2004. Page iii.

⁹⁹ Ibid. Page 15-16.

The Department of Homeland Security (DHS)

With the release of HSPD-9, the Department of Homeland Security (DHS) was named the Lead Federal Agency (LFA) in coordinating response to biological or agricultural incidents. However, because terrorism is considered a criminal act in the U.S., the FBI and law enforcement agencies take the lead in investigating the causes of the disaster.¹⁰⁰ This division of jurisdiction will likely result in a slow response from DHS and other subordinate agencies while law enforcement agencies attempt to ascertain causality. While sharing jurisdiction with the FBI will impede response, not sharing information with other responding agencies will impede success.

Recently, DHS began developing a Homeland Security Information Network that would facilitate the sharing of information between departments should a disaster occur. However, according to a GAO report, DHS does not “promptly and effectively seek input from key stakeholders on critical national guidance documents.”¹⁰¹ In particular, state and industry officials claimed that DHS did not allow them ample time to review the latest version of the National Response Plan (NRP). Because of this failure, officials are concerned that the response plan may set unrealistic expectations regarding the states’ capabilities to meet the requirements of the plan.¹⁰² Additionally, DHS does not systematically share after action reports from national and state-level exercises simulating agroterrorism events and there is not a mechanism for states or industry leaders to share lessons learned from response to real animal and plant disease outbreaks. One of the primary concerns from state officials is the ability to learn lessons from real life and exercises about better ways to communicate during an outbreak.¹⁰³ This concern was highlighted

¹⁰⁰ *FEMA after Katrina*. Policy Review. Stanford University, Hoover Institution. No. 137. June and July 2006. Pg. 10.

¹⁰¹ Homeland Security: Much is Being Done to Protect Agriculture from a Terrorist Attack, but Important Challenges Remain. U.S. Government Accountability Office. Washington, D.C., March 2005. Page 7.

¹⁰² Ibid. Pages 47-48.

¹⁰³ Ibid. Pages 47-48.

at the 2001 United States Conference of Mayors, where officials attempted to better understand emergency response.

Problems with State and Local Response

In October 2001, The United States Conference of Mayors began a series of meetings in Washington, D.C. on homeland security. The first meeting consisted of over 200 mayors, police and fire chiefs, emergency managers and public health officials tasked to examine the new security situation confronting the U.S. Specifically, the conference focused on the costs already incurred by the cities in the weeks following the 9/11 attacks, and to examine the even greater costs projected by the cities as they prepare to take on their new homeland security responsibilities. As a result of the meeting, the council drafted the *National Action Plan for Safety and Security in America's Cities* addressing three primary areas of concern: 1) transportation security; 2) emergency preparedness, including interoperable communications; and 3) federal/local law enforcement.¹⁰⁴

Of the three areas of concern, "Communications and Technology" was the area most vital to the conference. Subsequent to the initial conference, several surveys were sent out by the council and respondents from 192 cities representing 41 states concluded that 23% of cities do not have interoperable communications across police and fire departments, and 33% were not interoperable across police, fire and EMS. The survey also found that 86% of the cities report that they do not have interoperable capability with the state transportation department and 94 percent do not have interoperable capability between the rail facility, police, fire and emergency medical service.¹⁰⁵

¹⁰⁴ *Five Years Post 9/11, One Year Post Katrina: the state of America's readiness*. U.S. Conference of Mayors, 2006 Survey on Homeland Security and Emergency Preparedness. Page 1.

¹⁰⁵ *Interoperability Survey*, U.S. Conference of Mayors, Washington, D.C.: GPO, June 2004. U.S. Conference of Mayors. Page 2.

A larger concern for the mayor's surveyed was the lack of interoperability with state and federal communications networks. Of the 192 cities surveyed:

90 percent report that they do not have interoperable capability with the National Guard.

88 percent report that they do not have interoperable capability with Homeland Security (FEMA, Customs, Borders...).

86 percent report that they do not have interoperable capability with the state transportation department.

83 percent said that they do not have interoperable capability with the Department of Justice (FBI, JTTF, ATF...).

60 percent said that they do not have interoperable capability with the state emergency operations center.

60 percent said that they do not have interoperable capability with the state emergency management agency.

53 percent report that the city has not been included as part of the state's interoperability assessment.

49 percent report that they do not have interoperable capability with the state police.¹⁰⁶

In 2006, the United States Conference of Mayors held a second meeting to study disaster preparedness and released a report entitled, *Five Years Post 9/11, One Year Post Katrina: the state of America's readiness*. In this report, 183 mayors representing 38 states answered survey questions concerning their city's homeland defense preparedness. Most of the questions focused on whether a city was prepared to sustain itself after a major disaster or an outbreak of pandemic flu. While the majority of cities claimed they were capable of handling a disaster for 72 hours

¹⁰⁶ *Interoperability Survey*, U.S. Conference of Mayors, Washington, D.C.: GPO, June 2004. U.S. Conference of Mayors. Page 7.

without the help of the Federal Emergency Agency (FEMA), only 30% of cities stated they were capable of handling a pandemic flu outbreak and only 28% of cities have established an emergency plan with local military bases.¹⁰⁷

¹⁰⁷ *Five Years Post 9/11, One Year Post Katrina: the state of America's readiness*. U.S. Conference of Mayors, 2006 Survey on Homeland Security and Emergency Preparedness, Washington, D.C.: GPO, June 2006. Pgs. 4-6.

Chapter 5: Conclusion

In the years since 9/11 tremendous strides have been made in making America safer from foreign and domestic terrorism. The reorganization of federal agencies under the DHS and numerous new presidential directives provide the nation an umbrella of infrastructure increasing our ability to prevent, prepare, respond and recover from domestic BW attacks, but more work lies ahead in developing disaster response plans, ensuring key personnel and facilities are in place, reducing redundancy of effort and ensuring adequately trained and resourced National Guard soldiers are available.

The threat of these highly toxic animal pathogens such as foot-and-mouth disease (FMD) is real, and our enemy's have the capability and will to employ these weapons against the U.S. Either through an aerosolized delivery system or a single infected animal, a terrorist can potentially expose thousands of animals to a destructive pathogen leading to hundreds of fatalities, disruption of the U.S. economy and mass social chaos. Despite these potential threats, the U.S. lacks a concerted national program to prevent and control illnesses caused by these pathogens. The importance of protecting our animal food supply should not be underestimated, as it contributes over \$1 trillion annually to the U.S. economy and 15% of the U.S. Gross Domestic Product.

Americans envision many scenarios of how terrorists might attack the U.S., but we must recognize that some scenarios are more likely to happen than others. According to a leading agroterrorism expert, the threat of FMD "is the agricultural equivalent of a threat to use smallpox on a human population, with the difference that FMD is more readily available than is smallpox."¹⁰⁸ Implementation of effective food security and counterterrorism programs requires moving beyond broad generalizations about whom or what is threatened by bioterrorism to a

¹⁰⁸ Shawn O. Cupp, *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science. Agroterrorism in the U.S.: Key Security Challenges for the 21st Century*. Mary Ann Liebert, Inc., Volume 2, Number 2, 2004. Pg. 4.

focus on those scenarios that are both most probable and potentially most damaging. With the widespread distribution of infectious disease agents in other countries, we are very vulnerable to the accidental or intentional introduction of these pathogens.

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